

2. In 83.3 per cent. the attacks were greatly diminished both in number and severity.

3. In 2.3 per cent. the treatment had no apparent effect.

4. In 2.3 per cent. the number of attacks was augmented during the period of treatment.

5. The form of the disease, whether it was inherited or not, whether complicated or not, recent or chronic, in the young or in the old, in healthy or diseased persons, appeared in no way to influence treatment, the success being nearly in the same ratio under all these conditions.

6. In 66.6 per cent. there was no trace of bromide poisoning. In the remaining 33.4 per cent. this was observed in varying kinds and degrees, but in no case to any serious extent, namely, physical weakness in 28.5 per cent., mental weakness in 18.8 per cent., and the so-called bromide eruption in 16.6 per cent.

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ARTICLE III.—*On the Shape of the Empty Female Bladder.* By D. BERRY HART, M.D., F.R.C.P.E., Assistant to the Professor of Midwifery, University of Edinburgh, etc.

(*Read before the Obstetrical Society of Edinburgh, 12th January 1881.*)

THE empty female bladder may present one of two shapes. In the large majority of specimens figured it forms with the urethra a Y shape on sagittal mesial section. The oblique legs of the Y may be about equal in size, or the posterior may be shorter (Figs. 1 and 2). This form is so common that it has been accepted hitherto by all authors as the normal one. In certain cases, insignificant in number as compared with the former, the empty bladder cavity forms with the urethra a continuous tube on vertical mesial section (Fig. 3). As a whole, in such cases, it is oval in shape, corrugated, and firm to the touch. This latter shape is constantly the one found in the lower animals, such as the rabbit and dog, and is the only one I have ever seen in the human foetus (Fig. 4). If, therefore, the pelvic floor of a woman be viewed on its peritoneal aspect, the fundus of the empty bladder will be found to be almost always large and concave, while in a few cases it is small and convex. In the one case, the inner surface of the upper segment of the bladder, large in area, is in contact with the inner surface of the lower segment; in the other, the anterior and posterior walls, small in area, touch one another.

To-night I wish to consider why we should have the bladder presenting two such sharply contrasted forms, to attempt to settle which is the normal one, and to consider the whole question in some practical bearings.

The anterior, posterior, and lateral relations of the bladder are

of interest. Anteriorly it is separated from the pubis by a large amount of fat—the retropubic pyramidal fat (Figs. 1 and 2). Posteriorly the connexion between it and the uterus and upper part of the vagina is also loose. Laterally the bladder is more fixed. The same facts as to looseness of anterior and posterior connexions holds good for the male bladder.

The arrangement of the unstriped muscular fibres of the bladder is on the same plan as those of the uterus, *i.e.*, we have external longitudinal unstriped muscular fibres, with their fixed point below; circular ones running at right angles as well as obliquely to these, and an internal longitudinal layer below the submucous coat. It is evident that their unhindered contraction will give the bladder the cylindrical form which I have described as the one rarely found. So far, then, as the normal arrangements of the bladder go, we see provision made for muscular contraction which shall ultimately bring the anterior and posterior walls, diminished in area, in contact.

I have now to take up the Y-shaped bladder and explain its occurrence. This can be beautifully studied in the specimen I here show, of which figure 1 is an accurate drawing. In this specimen the Y shape which the bladder forms with the urethra can be well seen. The causation of this shape is as follows:—

It can be readily seen that the uterus is anteflexed. Starting from the posterior angle of flexion, and running to the left and upwards, thickened bands can be seen, the cicatrized left utero-sacral ligament. The shortening of the ligament has had a four-fold effect. It has dragged the uterus backwards and to the left side. Inasmuch as the cervix is fixed in the pelvic floor, and the fundus surrounded by intestine, the effect of this backward drag has been specially spent on the uterine insertion of the ligament, *i.e.*, the uterus has become anteflexed. A simple experiment will make this clear. If a gum elastic bougie be fixed at either end, and then be grasped between the finger and thumb about two inches above its lower end and pulled back, the bougie will become flexed or bent. In the fourth place, the bladder has been pulled back so as to make its retropubic attachment tense and pull its posterior wall behind the urethra, *i.e.*, to give it the Y shape seen.

Fürst has published a beautiful section of a uterus less anteflexed, and a bladder less distorted, bearing out exactly the explanation already given (Fig. 2).

The evacuation of the urine seems to be accomplished by the contraction of its unstriped muscular fibre and the action of intra-abdominal pressure. Both of these are effective only when the empty bladder can assume such a shape as figure 3 shows, *i.e.*, when the anterior and posterior walls of the bladder diminish in area and come together. It is evident that when the bladder is tied back as already described (Fig. 1), its contraction is minimized, and the expulsion of the urine must be chiefly accomplished by intra-abdominal pressure. In one so-called case of hysterical retention I found the uterus anteflexed and drawn back so far as

apparently to account for the patient's inability to micturate oftener than once in one or two days. At the same time, I have seen patients in a like condition where urination was normal.

The practical points I wish to bring out are as follows:—It is now undoubted that the normal uterine position is one of inclination in front of the axis of the brim. I do not believe, however, that the anteversion is so excessive as most German authors allege, as the amount of anteversion they believe in renders necessary the figuring of the Y shape of the bladder and urethra as normal.

When the empty bladder and urethra form the Y shape we have no vesico-uterine pouch, but a vesico-abdominal one. The less frequent shape of the bladder gives the vesico-uterine pouch.

It is evident by examination of plates and specimens that the muscular contraction of the bladder is more marked when the bladder has the cylindrical form than when it has the Y form. Braune and Heitzmann figure bladders of this shape whose walls are antero-posteriorly as thick as those of the unimpregnated uterus (Figs. 3 and 5). In no bladder with the Y shape is this nearly the case.

The conclusions advanced are as follows:—

1. The empty bladder in the foetus has always its anterior and posterior walls in contact.
2. In the adult female the same is the normal one for the contracted bladder, but is rarely found.
3. The Y shape can, in certain cases, be traced to a dragging back of the uterus by inflammatory cicatrization, or to undue anteversion.
4. The Y shape is, however, found normally in some cases, *e.g.*, the early puerperium (Rüdinger).

I have not given a vertical section of the female pelvis with the organs placed in what I believe to be the normal posture. Satisfactory attempts, based on clinical investigations and sectional anatomy, have been made by Schultze, His, Schröder, F. P. Foster of New York, and others. At present, however, gynecologists have not sufficient data to enable them to be dogmatic in this matter. Clinical investigation of the position of the uterus bimanually gives it an excessive amount of anteversion (well seen in Kocks's plates), owing to the fact that the examiner anteverts it beyond its normal anteversion in order to grasp it, and, in addition, lengthens the vaginal walls. The question of the amount of projection of the soft parts below the pelvic outlet has still to be settled. For this reason I feel that the figuring on my part of any normal diagrammatic section would lead to error. To avoid this I have given woodcuts only of actual sections. Those who wish to see additional accurate drawings of actual specimens should also consult the atlases of Pirogoff, Legendre, and Braune, and a paper by His.¹

¹ Since writing the above, my friend Dr Milne Murray has made the ingenious suggestion that the bladder has its systole and diastole just as the heart has; that

DR HART ON THE SHAPE OF THE EMPTY FEMALE BLADDER.

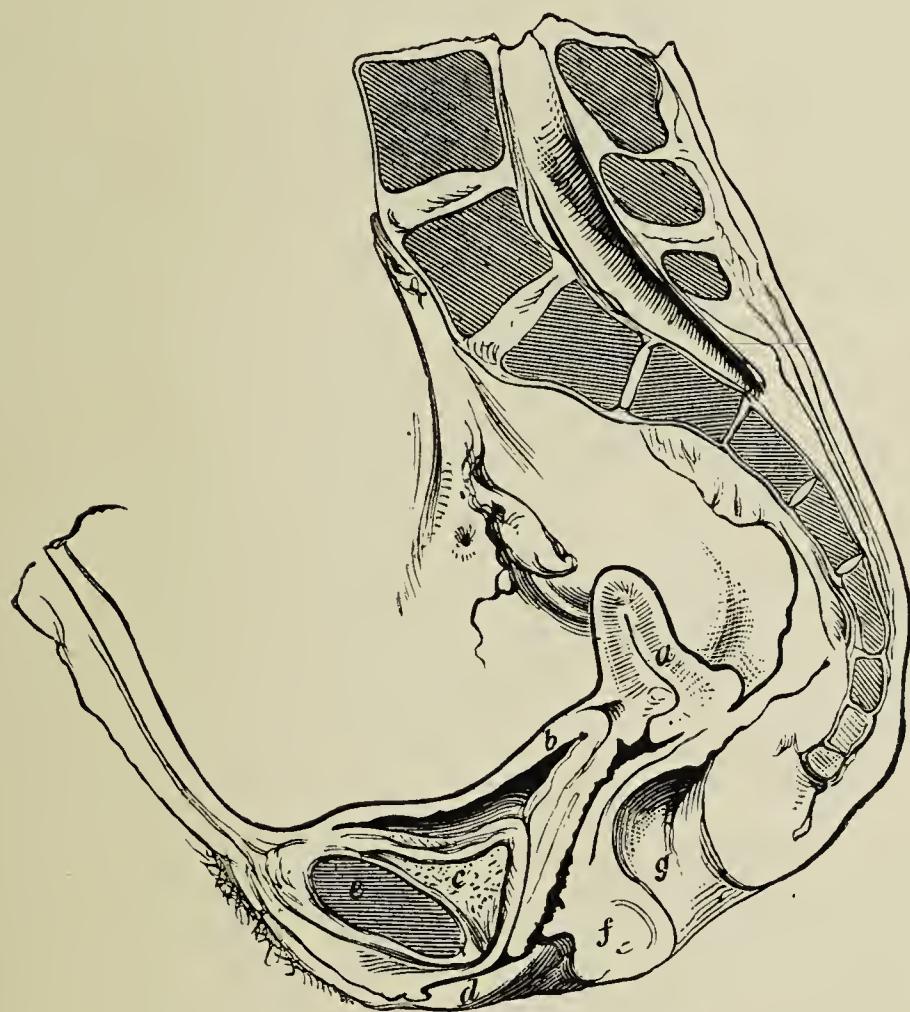
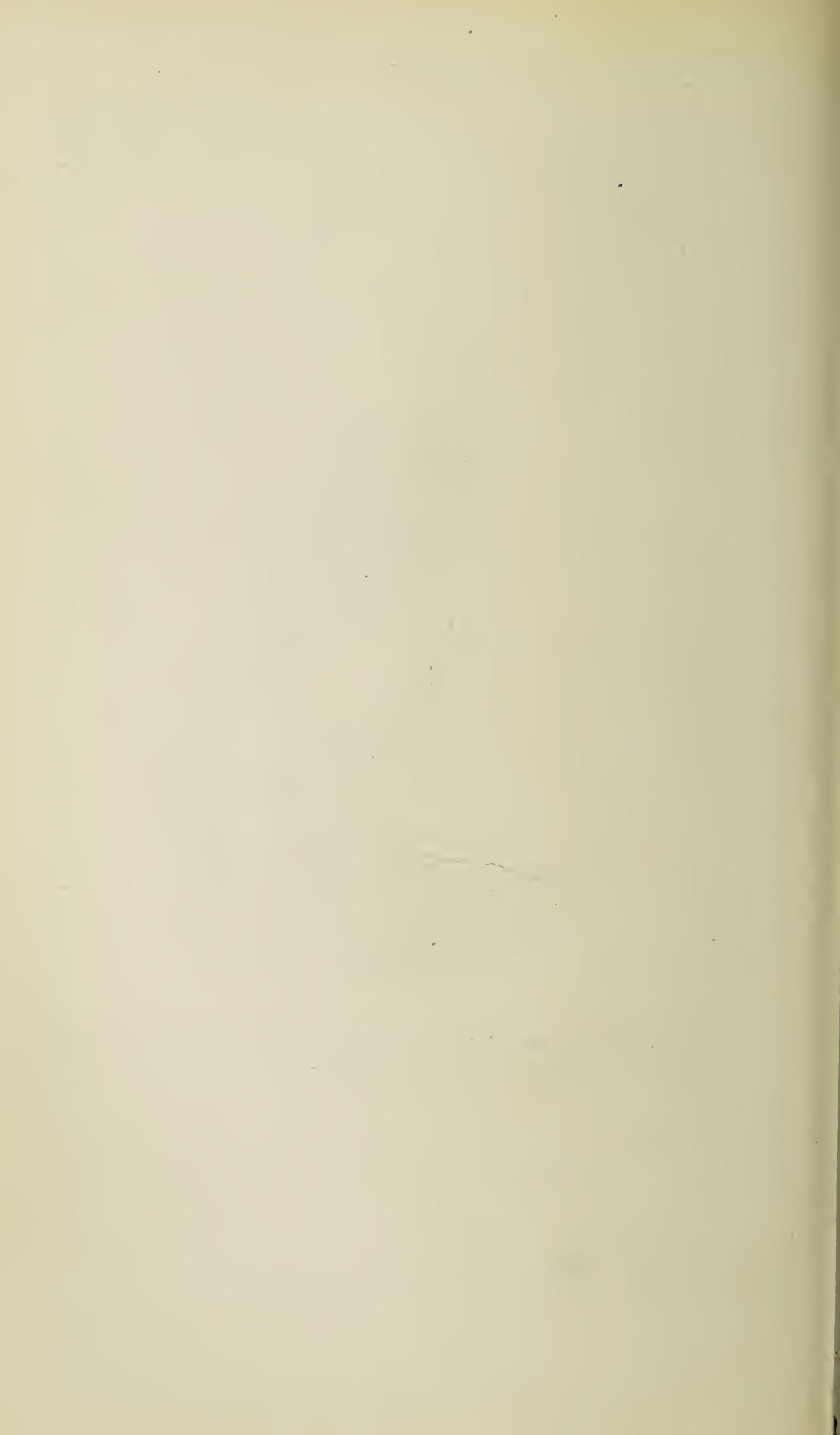


FIG. 1.—Vertical mesial section of female pelvis (spirit-hardened), showing Y shape of bladder (b). The uterus (a) is anteflexed and drawn back by cicatrized utero-sacral ligament.



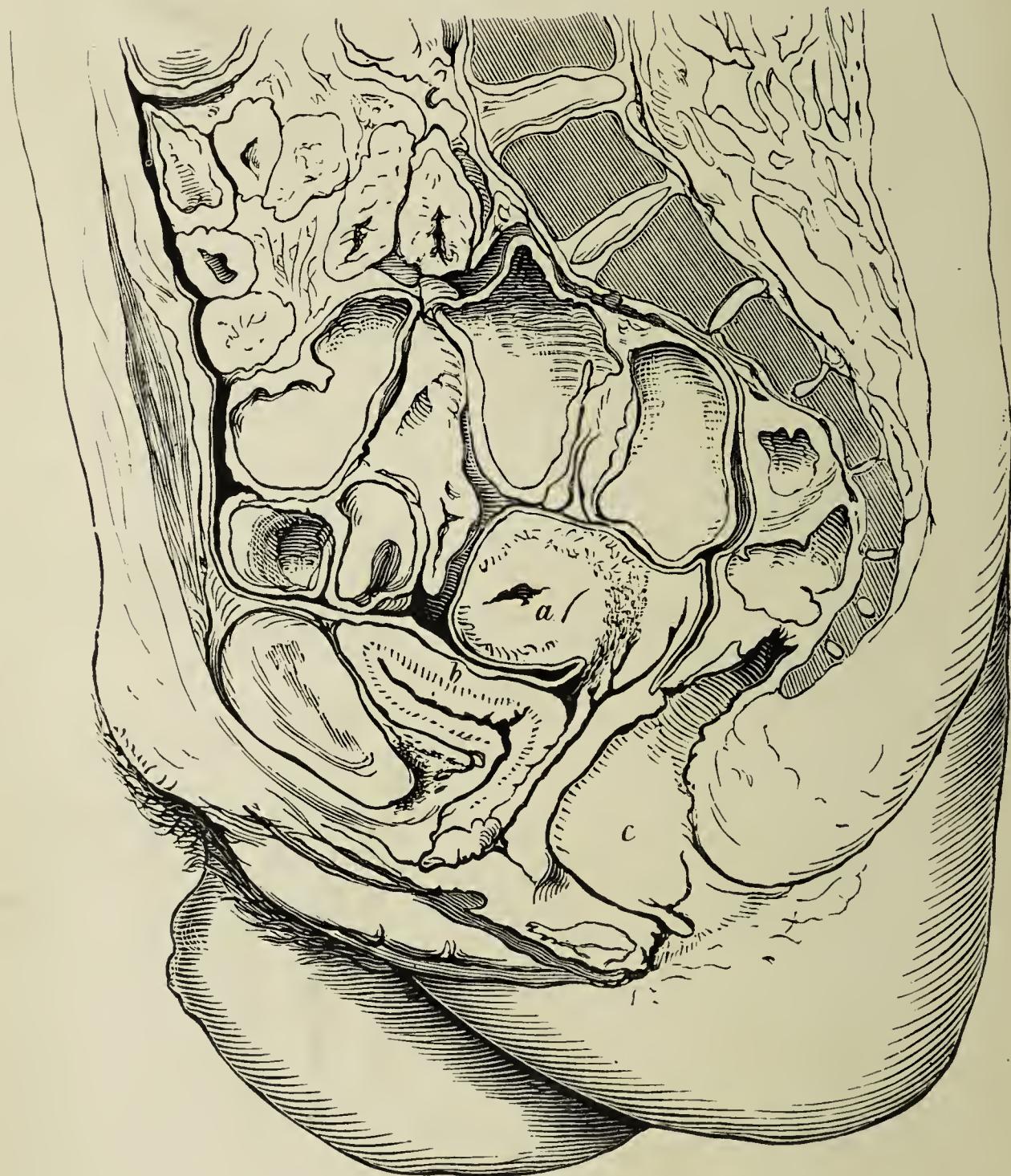


FIG. 2.—Vertical mesial section of female pelvis (frozen). The Y-shaped bladder (b), and the vesico-uterine and retro-uterine pouches, neither of which contains intestine, are well seen.—(Fürst, in *Archiv für Gynäkologie*, Bd. vii. S. 407.)

a Uterus.

b Bladder.

c Rectum.

DR HART ON THE SHAPE OF THE EMPTY FEMALE BLADDER.

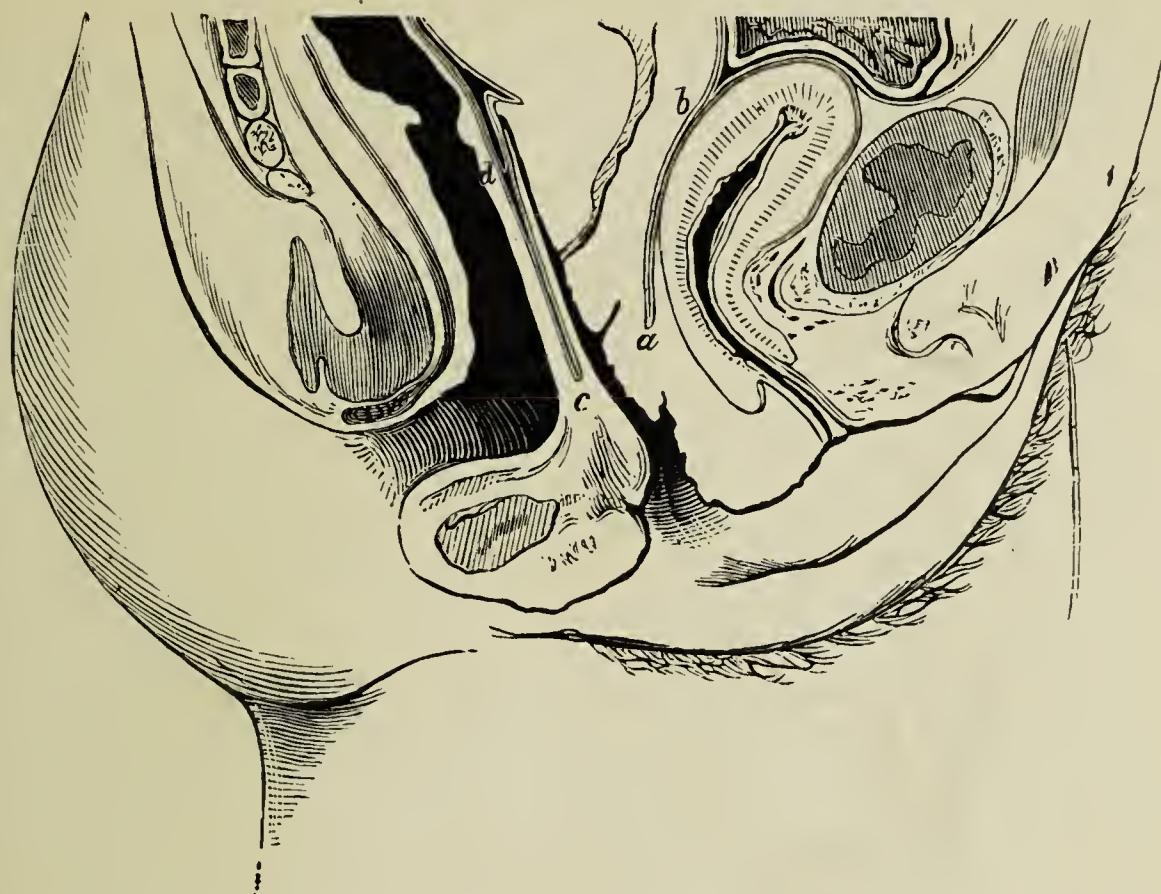


FIG. 3.—Vertical mesial section of female pelvis (frozen).—*a b*, shows the posterior loose connexion of the bladder to the cervix and vagina. The peritoneum passes from bladder to cervix at *b*. *d c* shows loose connexion between rectum and vagina, the pouch of Douglas descending to *d*. The bladder is empty, contracted, and has its anterior and posterior walls in contact.—(Braune.)



4.—Vertical mesial section of foetal female pelvis (spirit-hardened).—Empty bladder (c) is above pubis; *b* is vagina; *a* uterus cut to one side.



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DR HART ON THE SHAPE OF THE EMPTY FEMALE BLADDER.

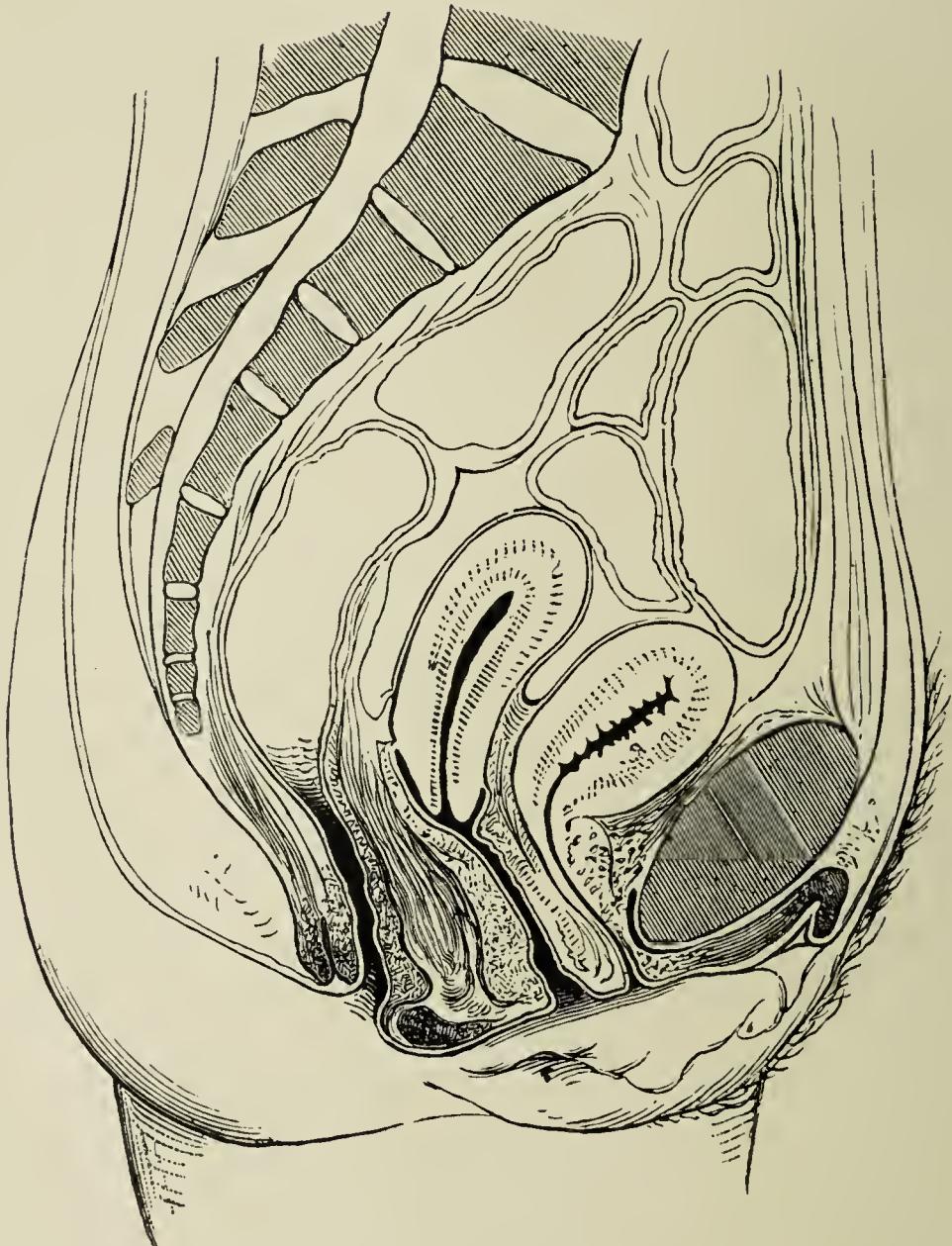


FIG. 5.—Vertical mesial section of female pelvis (frozen), showing contracted bladder and ante-uterine and retro-uterine pouches.—(Heitzmann.)

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For other literature see Foster's paper.

ARTICLE IV.—*On Fever in Ningpo and Chefoo.* By W. A. HENDERSON.

DURING a residence of eighteen months in Ningpo¹ I have been very much struck by the absence amongst the members of the community of the habitual deposit of urates in the urine, the condition termed lithuria; whereas, during a long residence in Chefoo, I found it frequently existing amongst the foreigners. This pathological difference between the two localities led me to make inquiry of an individual who had removed from Chefoo to Shanghai, and the contracted form in Figs. 2 and 3 is the bladder in systole, and the Y shape in diastole. Of course, this holds good only for cases where there is not posterior pelvic inflammatory cicatrization. One interesting point should be noticed, viz., that the women in whom Braune figures the bladder in systole, *i.e.*, contracted, died violent deaths by suicide (hanging). It is evident that this systole of the bladder, if it exists, must draw the cervix forwards. There is no clinical evidence on these points; and clinical investigation, from its difficulty, would be apt to lead into fallacy. At the same time, carefully conducted examination would lead to some interesting results in regard to urination—a subject not as yet well understood.

¹ The latitude of Ningpo is 29° 55', and that of Chefoo 37° 35'.

who had formerly been very much subject to the deposit, as to his present state. He told me that after the change of locality he became entirely free from it, even after moderate excesses in diet. In Chefoo he had, like others similarly affected, to exercise the greatest caution in regard to diet, as any strain upon his liver was at once followed by the deposit. In those subject to lithuria, as a rule, the deposit immediately appeared after the consumption of an immoderate amount of any article of diet, solid or liquid, with the exception of two in which excess would be difficult, viz., bread and water. From another individual who had resided in Chefoo I got a like experience. Previous to his taking up his abode in Chefoo he had not been troubled with the affection. After residing there for some time he lost weight considerably. This he was able to gain in part when in full exercise, but it was lost again when the exercise was relaxed. Now, with change of residence to the south, he has recovered his original weight. A third individual, with a strong tendency to lithuria, was compelled periodically to seek temporary refuge in a moister climate, and invariably returned in a state of vigour which he could not otherwise have attained. A fourth was so affected with lithæmia that his medical adviser ordered him to leave Chefoo, and the change was followed by the happiest results. The explanation of the presence of the deposit in the one locality and its absence in the other seems to be found in the difference between the two climates, the northern being dry and the southern moist. As the hygrometry of both ports has been neglected, we are left to form the notion of their relative humidity from the mean daily range of temperature. Buchan states "that the daily range is least in wet climates and in temperate climates. Hence it is less in Ireland than in Scotland, greater in England than in both these countries, and still greater on the continent of Europe." The mean daily range at Chefoo for the year 1879 was 17° ; that of the previous year was 16° . These figures are not obtained by unusual dryness during a few months and corresponding dampness in others, but to a general monthly approximation to the average. During a couple of varying months each year it rises as high as 20° . In the month of June 1876, the year of drought, it was 26° . During 1878 and 1879 the lowest monthly range was 12° . In Ningpo the range has not been observed since 1872 and 1873; previously it had not been noted. The mean daily range of those two years was 9° . In Ningpo the highest monthly ranges are about 13° , and the lowest 5° . It is thus seen that Ningpo has about half the range of Chefoo.

To these figures several objections, amongst which is that they are the difference between the mean of the coldest and the mean of the warmest of the twenty-four hours, might be made; but, unfortunately, they are all that can at present be offered on the subject. Chefoo may be regarded as bracing or exciting according to the degree of dryness, and Ningpo as sedative or relaxing according to the presence or absence of excessive humidity.